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ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS, INC., 509 FIFTH AVENUE, NEW YORK 17, N. Y.

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Dear Sir:

The fifth nuclear device of the current series of experimental tests of nuclear explosives was detonated in the last fortnight at the USAEC's test area near Las Vegas, Nevada. Fired from a 300-foot tower, the intensity of the explosion was such that, reportedly, it was heard as far away as Idaho, Colorado, and Montana. This was the 29th recorded nuclear detonation set off by the United States. At least one more test, involving Army troops, is scheduled for later this month.

The keel of the U.S.'s first nuclear-powered submarine will be laid next month, the Navy Department announced in Washington last week. The hull is being built on the ways of the General Dynamics Corp. (formerly called Electric Boat Co.), at Groton, Conn., under a Navy contract. Meanwhile, work is progressing on the nuclear reactors which may power the hull, at Arco, Idaho, and at Knolls Atomic Power Laboratory (page 2, this LETTER).

The atomic weapon developed by Great Britain will be tested at the Monte Bello Islands, off the northwest coast of Australia, in a joint operation involving Britain's three fighting services and the Ministry of Supply, as well as the Australian Government and Australia's three fighting services. The test itself will be under the scientific direction of Dr. W. G. Penney, senior official of the Ministry of Supply, the agency responsible for Britain's nuclear energy program.

Plans have been announced for a three-day conference on medium energy nuclear physics at the University of Pittsburgh, June 5, 6 and 7. The conference program will be limited to studies of particles accelerated in electrostatic generators, or conventional cyclotrons. Further information may be obtained from Dr. D. Halliday, Head of the Department of Physics, University of Pittsburgh, Pittsburgh 13, Pa.

A conference on the use of isotopes in plant and animal research will be held June 12-14 at Kansas State College, Manhattan, Kansas. It will be jointly sponsored by Kansas State College, Argonne National Laboratory, and the Isotopes Division of the USAEC. A detailed program for the conference is available, and may be obtained from Director R. I. Throckmorton, Kansas Agricultural Experiment Station, Manhattan, Kansas.

The large growth in the U.S. of radioisotope applications in numerous phases of industrial research is now shown in the USAEC's report on progress in this field during the past 5-years (page 4, this LETTER, explains how to obtain this report). Instances of real growth in the many applications of radioisotopes are seen in the five-year distribution program. During the first year of the program, approximately 1,000 radioisotope shipments were made to some 150 research institutions. Then, in the subsequent 4-years, almost 18,000 shipments were made. Another index of growth is the publication of scientific papers based on work done with USAEC-supplied isotopes. After 5-years of work, some 1,800 such papers were evident. During the remaining 2-years, more than 1,400 additional papers had appeared.

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INDUSTRIAL ATOMIC ACTIVITIES...

ELECTRICAL ENERGY FOR NEW URANIUM SEPARATION PLANT- To supply the electrical energy needs of the new gaseous diffusion uranium separation plant, which the USAEC proposes for the Ohio River Valley, several power companies, in the Valley, have proposed the formation of a power combine, which would supply the 1.8 million KW it is estimated the new plant will require. The companies, which proposed the combination, include: American Gas & Electric; Appalachian Electric Power Co.; Cincinnati Gas and Electric; Kentucky Utilities Co.; Cleveland Electric Illuminating Co.; Public Service of Indiana; West Penn Electric Co.; Louisville Gas & Electric; Indianapolis Power & Light Co.; Ohio Edison Co.; Dayton Power & Light Co.; Southern Indiana Gas & Electric; and Toledo Edison Co. (The constantly increasing power needs of the U.S.'s atomic program, supplied in a large measure by the Tennessee Valley Authority, have been one of the factors resulting in an increase of some 2 billion KWH in TVA's electrical energy sales, that agency has now reported.)

PEACETIME APPLICATIONS OF NUCLEAR ENERGY- Dr. C. J. MacKenzie, chairman of the Atomic Energy Control Board of Canada, said last week in New York that industrial utilization of nuclear energy depended on finding cheaper methods of producing fissile materials, and on obtaining profitable industrial uses for them. He pointed out that atomic competition for present industrial power plants depended on plutonium's bringing a high enough price to make the distribution of heat energy from nuclear energy economically feasible. Most of the cost of operating atomic installations would have to be paid for through sales of plutonium and other radioactive materials, he explained. Dr. MacKenzie, who is also president of Atomic Energy of Canada, Ltd., the government-owned company operating the Chalk River atomic establishment, spoke before the National Industrial Conference Board, meeting in New York last week. Most of its research in nuclear fields since 1945 has been directed toward non-military applications, Dr. MacKenzie emphasized. He predicted that after the demand for fissile material to use in bombs has dropped off, the search for new uses will become an international competition. He said there were eight reactors in four countries outside of the Soviet Union and the United States, and that in a few years double that number would be operating in a dozen countries.

INDUSTRIAL HYGIENE TRAINING PROGRAM- A one year fellowship training program for industrial hygienists will be started in the Fall of 1952 by the USAEC, that agency has now announced. It was explained by an official of the USAEC that at the present time the supply of chemists and engineers equipped with the special knowledge required for positions in industrial hygiene is extremely limited. Further, that several USAEC installations now require the services of industrial hygienists, and that the expansion program will create requirements for others. Inquiries should be directed to Merril Eisenbud, USAEC, 70 Columbus Ave., New York.

TAX IMMUNITY OF USAEC CONTRACTORS- The immunity from motor fuel taxes and other state levies now enjoyed by contractors working on USAEC projects was protested by Charles F. Conlon, National Association of Tax Administrators, who addressed the North American Gasoline Tax Conference in New York last week. Conlon referred to the tax ruling handed down by the United States Supreme Court this January 7th last which relieves private contractors servicing USAEC projects of state and local levies. He said that if the USAEC retains this status, eventually all Government departments and agencies will seek similar status, and the state tax losses will run into many millions.

NEW USAEC CONTRACT- Contract for $2,146,000 has now been awarded Chicago Bridge & Iron Company, by the USAEC, to construct at Knolls Atomic Power Laboratory, West Milton, N.Y., a bell-shaped steel building to house a land-based prototype of a nuclear reactor for submarine propulsion. Fabrication of the building will begin at once at Chicago Bridge's Greneville, Pa., plant. Present plans call for on-site construction at Knolls to start in July. Unique in that it will consist mainly of a 225-foot-diameter steel sphere, the building (like an inverted cup) will be supported by a circular concrete foundation. Plans for the building were prepared by General Electric Co., the prime USAEC contractor at Knolls.

RAW MATERIALS...radioactive minerals for nuclear work...

UNITED STATES- Colorado: Offices in Placerville have now been opened by the Bachelor Corp., a new minerals organization. A new mill to handle the concentration of complex uranium ores, and act as a custom mill on silver-lead ores mined in the area, is to be constructed as soon as the weather permits, an official of the firm has stated. The company's facilities now include apparatus for radiometric analysis of uranium ores, as the company is interested in all complex types of uranium bearing ores, as well as ores containing the rare earths.....The controlling interest in Four Corners Uranium Corp. is expected to pass to Silver Bell Mines Co. in the very near future, the latter firm has announced. Core drilling on Four Corner's properties is now underway in accordance with a contract between the firm and the USAEC.... Uranium milling operations of Climax Molybdenum last year were "disappointing" according to Climax's annual report, recently issued. The firm was discussing results of its uranium and vanadium operations at Grand Junction, Colo. It said that it believed more satisfactory results could be obtained by doubling the capacity of the mill there, a project which will cost Climax $3,200,000.....Increasing prospecting activity at Edgemont, S.D. characterizes this area since the discovery of uranium minerals was announced last October in Craven Canyon, some 10-miles north of Edgemont. U.S. Vanadium Corp., the first major company here, has been active making tests in the field, and has shipped out several tons of sample uranium-bearing ores to its processing plant at Rifle, Colo. Reportedly, some favorable discoveries have been proven in limited pockets, and the survey is being expanded. Meanwhile, in addition to many private operators, certain "withdrawn areas" are being surveyed by geologists of the U.S. Geological Survey for uranium minerals. Observers in the field, however, have pointed out that it is too early to appraise the value and extent of uranium minerals here, as much more testing and production will be necessary.

CANADA- An intensified exploration program is planned by Baska Uranium Mines for its holdings in the Beaverlodge uranium area of northern Saskatchewan this year. Drilling is already underway on the Fish Lake group adjoining the Radiore-Eldorado ground on the east. Previously, surface work here had opened several showings which company geologists had termed promising.....A contract for shaft sinking has now been let by Rix-Athabasca Uranium Mines on the Smitty zone of the firm's large property in the Goldfields area of Saskatchewan. Initially, two levels are to be established.....The Canadian Government, through its wholly-owned Eldorado Mining & Refining Co., Ltd., has now extended the guaranteed price at which it will purchase uranium in ores and concentrates to March 31st, 1962.

INDIA- Figures for the estimated production of thorium oxide and rare earth compounds at the Indian monazite plant now reveal that the plant will be capable of producing about 800-tons of mixed rare earth oxides per annum. The production of thorium oxide is expected to be around 127 tons. In addition, as an important by-product, 15-tons of uranium oxide will be recovered. Several new finds of beryl and other minerals important in nuclear energy work have been located in India by the rare minerals survey unit of the Indian Atomic Energy Commission. The Commission is in touch with similar organizations abroad, and it is reported that an agreement has already been reached between the Indian body and the French Atomic High Commission for close collaboration on certain aspects of nuclear work.

PEOPLE...in the atomic program...

Whitney Weinrich is the new manager of the Process Engineering Section of Catalytic Construction Co., Philadelphia. Weinrich will direct all research and development, pilot plant investigation, and process design for the atomic energy, oil refinery, and chemical projects of the company.

John C. Bugher has now become director of the USAEC's division of biology and medicine. He succeeds Shields Warren, who returns to the New England Deaconess Hospital as pathologist. Dr. Bugher comes to the USAEC from the Rockefeller Foundation, where since 1938 he has been a member of the Foundations' international health division.

John H. Roberson has become manager of the USAEC's Dayton Area, succeeding Fred. H. Belcher who has been transferred to the Paducah, Ky., Area as assistant deputy manager. Dr. Roberson, as manager of the Dayton Area, is responsible for policies and programs and administration of all contracts for production, research, engineering, and construction activities at the USAEC's installation in the area.

NEW BOOKS & OTHER PUBLICATIONS...in the nuclear field...

Symposium on Radiobiology; The Basic Aspects of Radiation on Living Systems. Edited by James J. Nickson, Memorial Hospital, New York, and Cornell University School of Medicine. Specialists describe recent advances and summarize the present state of knowledge in their specialties. This publication is the outgrowth of the National Research Council Symposium on Radiobiology, held in 1950. 475 pages. -- John Wiley & Sons, Inc., New York 16, N.Y. ($4.00)

Radiological Monitoring Methods & Instruments; National Bureau of Standards Handbook 51. General information on radioactive material hazard determination and control, airborne hazards, surface contamination, personnel monitoring, etc. Also explained are radiation hazards which arise from such sources as X-ray units, radio-isotopes, and high-voltage accelerators. Considers radiation detection instruments which have proved useful in practice. --Superintendent of Documents, Wash. 25, D.C. (15¢)

Isotopes- A Five Year Summary of U.S. Distribution. A report by the USAEC on its isotope distribution program, for the last 5-years. 451 pages. --Superintendent of Documents, Wash. 25, D.C. ($1.00)

NOTES: The following publications dealing with atomic bomb defense for the civil population are available from the Superintendent of Documents, Wash. 25, D.C., at the prices indicated: (1) Atomic Blast Creates Fire; Are You Prepared? Discusses, for the housewife, how to prevent and fight fires. 5¢. (2) Federal Civil Defense Staff College, Olney, Md. Describes nature of the courses, enrollment and eligibility, location, arrival, communications, accommodations, expenses, etc. 10¢.

IONIZING RADIATION...medical applications & notes...

RADIOACTIVE CESIUM FOR CANCER THERAPY UNIT- Plans for developing a new type of cancer therapy unit were discussed at Oak Ridge Institute of Nuclear Studies, Oak Ridge, last week, by scientists from most of the southern medical schools. Proponents of the unit, which will use radioactive cesium, from uranium fission waste (more than 6% of the atoms resulting from uranium fission are cesium,), consider it an outstanding development in cancer therapy by radiation. Cesium, its proponents believe, will give radiation a flexibility, effectiveness, and economy never believed possible before. Dr. Marshall Brucer, chairman of the medical division of the Institute, is one of the principal supporters of the project. He believes that cesium can put supervoltage therapy units in the hands of every qualified radiologist in the country. In the past, supervoltage therapy from million-volt X-ray machines has been available only in a few of the largest hospitals. Moreover, Dr. Brucer maintains, cesium units offer an unheard-of flexibility in radiation therapy. The unit may be used as a single beam of radiation; as a multi-port beam converging on a tumor, such as is now being tested at the College of Physicians & Surgeons in New York; or a rotational beam, where the beam delivers the heaviest radiation dose to the tumor. Advantages of the cesium unit over other radiation sources are cited by Dr. Brucer as: (1) A unit will be good for 30-years without any maintenance cost. (2) When development costs are amortized, cesium units will be available at a fraction of the cost of present supervoltage units. (3) The single-energy radiation beam of about 600,000 volts will deliver a strong dose to the tumor with a minimum of dosage to intervening tissue, particularly when used in multi-port or rotating beam therapy. (4) Adequate radioactive cesium is now available for making large numbers of units as soon as separation processes are worked out (these processes are now on pilot plant scale).

RADIOACTIVE PHOSPHOROUS FOR DETECTION OF EYE TUMORS- Identification and localization of eye tumors may be aided by the use of radioactive phosphorous, according to Dr. C.I. Thomas, Dr. J.P. Storaasli, and J.S. Krohmer, Western Reserve University School of Medicine and University Hospitals, Cleveland, who have made a preliminary report of eight cases of possible intraocular tumors in which radio-phosphorous was used as a help in diagnosis. In the cases of tumors, some of which were proven by subsequent operations, the authors stated that a definite increase in the concentration of active material was detected in tumor material over that found in normal tissue. In two cases where no tumor was present, the activity proved to be uniformly distributed throughout the eye. (Radioactive material localizes at the site of tumors or malignancies.)

ATOMIC PATENT DIGEST...latest U.S. grants & applications...

GRANTS- Photomultiplier tube circuit comprising, in part, the combination of a source of light, with substantially low values of operating voltages, this tube being located adjacent the source of light. U. S. Pat. No. 2,594,703 issued April 29, 1952; assigned to United States of America (USAEC).

Viewing box for radioactive materials. A lead receptacle including, in part, a removable top portion consisting of a block of lead adapted to be placed on the bottom portion of the receptacle, and having a periscope therethrough adapted for shielding external viewing of a material contained in a cavity of the receptacle. This periscope includes an objective portion enclosed in the top portion of the receptacle, by water-tight windows, and an eye piece portion adapted to be removed from this top portion. U.S. Pat. No. 2,594,970 issued April 29, 1952; assigned to United States of America (USAEC).

Magnetic contouring system. A method of contouring the flux intensity emanating from a magnetic surface which comprises, in part, ascertaining continuously the flux intensity at contiguous points in a plane spaced from this surface and simultaneously perforating a thin record surface disposed between said plane and said magnetic surface in accordance with such points of equal flux density as are encountered. U.S. Pat. No. 2,594,989 issued April 29, 1952; assigned to United States of America (USAEC).

Universal manipulator for grasping tools. Comprises, in part, a tubular member, means at one end of this member and extending through the latter for transmitting opening and closing movement to a pair of separable jaws at the other end of it, as well as means for bodily moving these jaws angularly. U.S. Pat. No. 2,595,134 issued April 29, 1952; assigned to United States of America (USAEC).

Radiation counter tube. Comprises, in part, a central electrode and a surrounding substantially cylindrical electrode forming a portion of the counter chamber and having a longitudinal segment cut off therefrom, a sample holder, and means for moving the sample holder into or out of the counter chamber. U.S. Pat. No. 2,595,550 issued May 6, 1952; assigned to United States of America (USAEC).

Photomultiplier coincidence circuit. Comprises, in part, two multi-electrode photomultiplier tubes, delay means connected to the penultimate electrode of said first tube and to the last electrode of the second tube for impressing a delayed positive voltage on said last electrode in response to current flow at said penultimate electrode, and associated circuit. U.S. Pat. No. 2,595,552 issued May 6, 1952; assigned to United States of America (USAEC).

Protection of structures from noxious atmospheres. A series of umbrella-like screens of water are pumped up from a deep and uncontaminated source and are given an electrical charge. The structure to be protected is then enveloped by the water, which screens the structure from radioactive products, war gases, destructive heat, etc. U.S. Pat. No. 2,595,774 issued May 6, 1952 to Jack De Ment, Portland, Oregon.

Quaternary bismuth alloy. An alloy consisting of from 35-55% by weight of bismuth, from 15-40% by weight of lead, from 15-35% by weight of tin, and from 3-10% by weight of gallium. U.S. Pat. No. 2,595,925 issued May 6, 1952; assigned to United States of America (USAEC).

Uranium-aroyl aldehyde complexes and method of making same. As a new composition of matter, a complex of uranium with benzollacetaldehyde. U.S. Pat. No. 2,596,047 issued May 6, 1952; assigned to United States of America (USAEC).

APPLICATION- (This is an abandoned application, published by request of the inventor or assignee, and printed here for its general interest.) Electro-deposition of uranium. A smooth, massive deposit of uranium metal is obtained by electrodeposition from a molten mixture of not more than 20 mol per cent of a uranium trihalide, preferably uranium tribromide, and one or more halides of the alkali and alkaline earth metals. Electrolysis is conducted at 500 deg. C. to 800 deg. C. in an inert atmosphere, such as helium, or in vacuo. The cathode may be of iron, tantalum, molybdenum, copper, graphite, or uranium. Application No. 791,465 made by the late Ermon D. Eastman, Berkeley, Calif.; published April 29, 1952.

Sincerely,

The Staff,
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